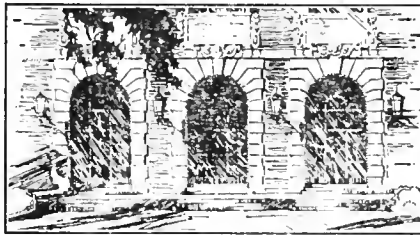


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**SPACE SEARCHING BEHAVIOR AND RELATED SUBJECTS:
Introduction and Bibliography**

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INTRODUCTION AND BIBLIOGRAPHY

by

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INTRODUCTION

Individuals search for, choose, sample, and evaluate destinations during the "space searching process"; they operate within a very individualized spatial reference system.

The recognized elements and configuration of one's spatial reference system depend upon factors which influence the decisions one makes. When traveling for the same purpose, different individuals affected by common influences behave in much the same way as they search for similar types of satisfaction. There are similarities in the structure of spatial reference systems for like-minded groups of travelers and, therefore, there are teleological categories of space searching behavior.

A better understanding of all types of space searching behavior becomes important as a means to an end -- greater efficiency in planning. More efficiently locating shopping centers has resulted from an increased ability to understand consumer decision-making behavior and to approximate the spatial reference system of the potential market. Factors influencing journey-to-work behavior are indirectly important in carefully

situating production locations within the spatial reference system of the potential labor force. Individuals anticipating a move to a new residential location make reasonably predictable decisions, depending upon socio-economic similarities, and select residential sites within their spatial reference systems. Subdivisions are located and planned by those developers with at least an implicit understanding of the ways in which individuals make site selection decisions and choose among the opportunities available to them within certain spatial boundaries.

"The notion of searching for an objective is a very general one that underlies many spatial activities" (2, 492). A variety of seemingly separate research clusters may be synthesized under the heading of space searching behavior; recognition of that fact is more recent than most geographers might think. For example, although research under the heading of journey-to-work studies has been with us for decades, attention to behavioral aspects of the employment space searching process (rather than to the journey per se) is a current focus of studies in that general category. Recognition of space searching behavior as an eclectic category of geographic research was initiated by Peter Gould in the mid-1960's and later substantiated by Lawrence Brown, Frank Horton, Eric Moore, and their colleagues. Because many other geographers have now become interested in the individual's behavior within his spatial reference system, the number of writings under a recently unrecognized rubric has increased greatly in the past five years.

DEVELOPMENT OF RESEARCH CLUSTERS

Categorized by the purpose of the search and listed intuitively in chronological order¹, there appear to be five basic forms of space searching behavior:

<u>Form of Space Searching Behavior:</u>	<u>Purpose of Space Searching Activity:</u>
1. Entrepreneurial	Production site selection
2. Employment	Employment site selection
3. Consumer	Shopping for goods or services
4. Residential	Residential site selection
5. Recreation	Recreation destination selection ²

The bibliography provided here is selective and focuses primarily on recent behavioral studies.³

Gould's initiating study in 1966 (106) provides an overview of space searching procedures in other disciplines -- strategy, mineralogy, searching mathematical surfaces, search behavior of animals, and searching mazes.⁴ His conclusions in that overview were largely negative; little promise of employing such procedures

¹Intuitive chronological order of initiating research under or related to the associated traditional heading. For example, entrepreneurial space searching behavior appears first because research in classical economic location theory became increasingly salient over the first four decades of this century. Other clusters appeared later.

²Urban social travel destinations as well as indoor and outdoor recreation destinations.

³If the bibliography were all-inclusive and not focused primarily on recent behavioral studies, entrepreneurial space searching behavior could be traced at least indirectly back to Alfred Weber's classic work in 1909 (if not back to von Thunen in 1826) and the plethora of classical location theory studies would be included.

⁴See also citations 61, 77, and 99 for coverage of extra-geographic research.

in geographical contexts was offered. Getis and Boots in 1971 (84) arrive at negative conclusions concerning procedural cross-fertilization from studies of spatial behavior of rats, although Esser in the same year (78) discusses the similarities between human and animal spatial behavior. Interestingly, Golledge, Brown, and Williamson in 1972 (96, 61) -- citing the same source as mentioned above -- state that "Gould summarized an extensive literature related to space searching activities much of which has proved useful to the behavioral analyst." And Abler, Adams, and Gould in 1971 (2, Chapters 12 and 13) begin to operationalize many space searching concepts and to make progress that would not have been expected, given the earlier negative conclusions of one of the authors.

It should now be recognized that it is the basic concept that is of use to geographers -- as a frame of reference for integrating many microscopic research clusters -- and not so much the procedures used in and borrowed from other disciplines. In fact, there is at least the particularly geographic "procedure" of centrophoric analysis that can be and lately has been applied in morphological studies of household spatial reference systems (34, 35, 131). Once the space searching rubric is adopted following its diffusion through other disciplines and to geography, the inferential qualities of the centrophoric technique become far more salient in studies of the factors behind the formation of spatial reference systems (35).

Although, when traced to pre-behavioral days, entrepreneurial space searching behavior is perhaps the earliest investigated form, it is not the most well-represented in the behavioral literature. Following the wealth of early studies under the heading of classical economic location theory, the focus on behavioral aspects of entrepreneurial search is best represented by Simon (278 - 281) and by Cyert and March (58) -- and most recently by Pred (250) and by Wolpert (329, 330, 333, 334, 335).

Interest in behavioral aspects of the journey-to-work (employment space searching behavior) postdates an interest in the structural characteristics of the journey itself and in the socio-economic characteristics of those who are making the journey. Representing the more recent cluster are such investigators as Kain (154 - 157) and Wheeler⁵.

An interest in consumer decision-making behavior may be indirectly traced to Reilly in 1929, but is more appropriately represented by such later writers as Huff (138, 139, 141), and Golledge (90, 91, 93) and Yuill (337)⁶. Golledge's and Yuill's research would fit most appropriately under the heading of consumer space searching behavior.

⁵Coverage of pre-behavioral as well as behavioral investigations under the heading of journey-to-work studies is provided by James O. Wheeler in other Exchange Bibliographies (Numbers 65 and 324-325). See also Exchange Bibliography Number 40 for earlier works.

⁶See Exchange Bibliographies 208 (Kessler) and 230 (Andrews) for relevant spatial and non-spatial investigations.

Investigations of the "intra-urban migration process" (residential space searching behavior⁷) are the most numerous. Lawrence Brown, Frank Horton, Eric Moore, and their colleagues have provided a variety of thought-provoking results on this one form of space searching behavior and have, in fact, suggested the likelihood that space searching behavior is the appropriate rubric under which many other forms can be categorized. Studies of the spatial aspects of the residential site selection process have provided concepts, terminology, and methodology for researchers interested in other subsets of the space searching cluster.

Although implicitly initiated by Lucas (194 - 201) in the mid-1960's, a clear and explicit focus on recreation space searching behavior (34, 35) is a very recent phenomenon. There is potential for much fruitful comparative research on recreation space searching behavior in the future -- building upon the few contributions in recent years⁸.

Terminological Confusion Among the Clusters

Common to all geographic investigations of space searching behavior is a focus on the spatial reference system of the individual or the household -- and on the subsets of that system. No matter what type of spatial search one focuses upon, there is

⁷ "Inter-urban migration" studies (and perhaps some "mental map" studies -- given a focus on residential desirability) would also be included in this grouping. In addition to those included here, relevant citations may be found in Exchange Bibliographies 104 (Daniel), 497 (Sharma), and 501 (Bartholomew).

⁸ On various aspects of recreation, the following Exchange Bibliographies may be consulted: 153 (Westerlund, Church, and Weaver); 159 (Ditton); 190 (Lancaster and Nicholls); 193 (Ditton); and 245 (Perry). On a subset of recreation space searching behavior -- urban social travel -- see 173 (Stutz).

a need to accept a common terminology.

Although "awareness space" and "activity space" should now be commonly accepted subsets of the individual's (or household's) spatial reference system, many related terms have been used confusingly. Terminological confusion often shadows any flock of investigators converging on a new "pigeon-hole" -- at least for a time. And so it is for those interested in space searching behavior.

Only if there is a common agreement on terms for the subsets of spatial reference systems, can there be a synthesis of diverging research clusters under the rubric of space searching behavior. Clearly, though, no common agreement has yet been reached because: (a) explicit synthesis of the five subcategories under the heading of space searching behavior has not previously been suggested or recognized as likely; and (b) investigators in each subcategory perhaps did not recognize the "pigeon-hole" upon which they were converging. To put an end to a "chicken-and-egg" process, I would suggest that a synthesis of five subclusters under the rubric of space searching behavior is indeed appropriate and that the following definitional distinctions are acceptable to all investigators who have been "pigeon-holed" before and after the fact.

Borrowing from the investigators of the intra-urban migration process (residential space searching behavior), awareness space is defined as the set of destinations accessible to the individual (or household) and about which he possesses some knowledge -- resulting from direct or indirect contact.

The individual's choice of a destination is thus greatly affected by the amount and availability of information (that is, by the spatial properties of his "information field" (228). Given an awareness of opportunities, destinations may be chosen, sampled, and evaluated. Therefore, activity space is defined as the subset of destinations with which direct contact has been made. The character of the activity space is a function of the intensity of the respondent's past experience.

Lewin's (181) "phenomenal environment" and Sonnenfeld's (285) "operational environment" correspond to "opportunity set" or "vacancy set", used by many authors; these would include the destinations realistically available to a household (the operational universe within which the awareness space destinations lie). Sonnenfeld's (285) "perceptual environment," Wolpert's (328) "action space," and Tolman's (306) "cognitive map" correspond to the activity space, although Brown and Moore (24, 1) define "action space" as "those locations for which the intended migrant possesses sufficient information to assign place utilities" (presumably, then, a subset of the awareness space but not exactly coincident with the activity space, as defined here). Sonnenfeld's "behavioral environment" corresponds to the activity space and Simon (280) uses the related term, "activity system."

Brown and Moore (24, 8) consider the activity space to include the set of locations associated with the household's day-to-day activities which yield information from "direct contact" while there is a separate "indirect contact space" based upon information derived at second hand from such channels as

acquaintances' experiences and mass media. The information-yielding network of personal contacts has been variously defined -- "acquaintance field" (48), "acquaintance circle," or more popularly "social circle." Furthermore, Brown and Holmes (19, 308) include in the "search space" those locations to which an intended migrant aspires; the searcher's "aspiration region" (or "initial aspiration subregion") provides environmental and locational criteria according to which the search space is defined. Finally, Gould's (104, 111, 112) research on "mental maps" suggests that awareness space and mental map are not dissimilar terms.

Given this bewildering terminological disarray, it is certainly useful to show the relationship of each of these concepts to space searching behavior. Provided below is the intuitive reduction sequence (largest space to smallest space) for the subsets of the spatial reference system of a typical individual or household. The phrasology is general enough to be appropriate to any form of space searching behavior.

The world provides many possible destinations, only a few of which are realistically available to a household (the vacancy set or opportunity set). The household is aware of only some of those (awareness space); place utilities are assigned to fewer still (action space); and aspirations are attached to even fewer still (aspiration region). Given the set of destinations to which the household aspires, only some of these are singled out for search (search space) and only a few of these are frequently visited and become permanent components of the activity space.

Although best visualized in graphic form (34), the reduction sequence is left in verbal form because subsets of the individual's spatial reference system are highly irregular -- "amoeba-like" with a "swiss cheese" character in almost all cases. It is a very rare individual indeed who has subsets morphologically superimposed to resemble concentric ripples outward from his residence, the central focus!

It is best to restrict the proliferation of jargon and adopt activity space and awareness space as the basic terms to be used in morphological investigations of the household's spatial reference system. Opportunity set and search space are also useful and quite straightforward. Additional terms, so many of which begin with the redundant "a", should only be used where they are absolutely necessary to a clear understanding of the results of an investigation.

Once adopted, the basic terms are appropriate for all types of "space searchers" -- entrepreneurs, potential employees, shoppers, movers, and social and recreation travelers.

The Parent Cluster

Environmental perception and behavior of the individual are subjects receiving a great deal of attention in the recent geographic literature. "The inquiries of human geographers into perception embrace larger arenas than the precise physiological definitions of perception proposed by thirty years of clinical psychology or the carefully circumscribed delineations of several generations of philosophers" (76, 212).

English and Hayfield (76, 211-219) give an excellent review of the status of studies in environmental perception and behavior. Golledge, Brown, and Williamson (96, 59) provide another⁹ excellent overview, offering the following identification of the "behavioral point of view". "...The behavioral point of view involves (a) the researcher viewing the real world from a perspective of those individuals whose decisions affect locational or distributional patterns, and (b) trying to derive sets of empirically and theoretically sound statements about individual, small group, or mass behaviors."

An interest in the many forms of space searching behavior is held by geographers with this "behavioral point of view." Space searching behavior in all of its variety, then, promises to be particularly and increasingly well-represented in the geographic literature of the future. Given that conclusion, it is appropriate to place before those with the behavioral point of view the many sources (including sources categorized with hindsight) which lend credence to the validity of space searching investigations. A better understanding of all types of space searching behavior certainly has become important as a means to an end -- greater efficiency in planning for locations which logically must fall within the spatial reference systems of those who will use them.

⁹In addition to these works and the "general" section of this bibliography (next page), Exchange Bibliographies to consult would include: 93 (Harrison); 123 (Bell and MacGreevey); 235 (Preisner); 327 (Ostrander); 514 (Ewing, Lieber, and Rushton); 516 (Harrison); and 526 (May).

Organization of the Bibliography

Citations have been placed in the following categories, whether or not the author or authors of the work explicitly suggest that it is appropriate to do so. Given that it is the most well-represented subset of investigations, research on residential space searching behavior (particularly on the intra-urban migration process) is cited most frequently. Pre-behavioral investigations under the more traditional headings of location theory, marketing geography, journey-to-work studies, internal residential structure of cities, recreation geography, and the like are purposefully under-represented. Investigations related to recreation space searching behavior and to centographic analysis are well-represented because they are interests of the author. See the notes in the previous section for listings of relevant Exchange Bibliographies.

Inclusions here are those that most logically provide foundations for a greater understanding of space searching behavior -- predecessors, development of concepts and terminology, empirical investigations, and appropriate methodology. Beside each of the headings are listed the citation numbers of the sources which -- in this author's opinion -- apply to them. Bibliographic works are denoted by an asterisk (*).

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- B. Entrepreneurial Space Searching Behavior: 1, 58, 100, 119, 142, 143, 144, 145, 146, 168, 182, 231, 250, 278, 279, 280, 281, 327, 329, 330, 333, 334, 335
- C. Employment Space Searching Behavior: 154, 155, 156, 157, 323
- D. Consumer Space Searching Behavior: 64, 90, 93, 138, 139, 140, 337
- E. Residential Space Searching Behavior: 3, 17, 18, 19, 20, 21, 22, 23, 24, 25, 31, 40, 41, 42, 43, 44, 45, 46, 50, 59, 68, 73, 74, 75, 95, 110, 115, 132, 135, 136, 148, 152, 153, 154, 155, 156, 157, 158, 159, 166, 173, 174, 175, 176, 210, 213, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 229, 230, 234, 235, 236, 240, 246, 251, 254, 255, 277, 288, 293, 296, 308, 314, 322, 328, 331, 332
- F. Recreation Space Searching Behavior: 5, 12*, 13, 14, 15, 30, 33, 34, 35, 57, 60, 63, 71, 72, 79, 80, 87, 113, 127, 151*, 177, 190, 194, 195, 196, 197, 198, 199, 200, 201, 211, 212, 215, 233, 237, 239, 289, 309, 310, 311, 315, 324, 325, 326

II. Related Subjects

- A. Centographic Analysis: 6, 7, 26, 36, 37, 38, 70, 81, 82, 83, 85, 88, 111*, 110, 121, 125, 126, 130, 131, 141, 169, 172, 178, 180, 183, 184, 205, 232, 238, 248, 249, 269, 270, 275, 297, 298, 299, 300, 301, 302, 303, 312, 319, 336
- B. Perception of Natural Hazards: 27, 28, 29, 161, 162, 163, 164, 214, 265, 268, 274, 282, 316
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